

**Amendments to the Claims:**

*This listing of claims will replace all prior versions, and listings, of claims in the application:*

1. (Currently Amended) A ~~coarsening resistant automotive exhaust~~ catalyst composition comprising:

a metal or metal-containing compound that alters the amount of a chemical component in the automobile exhaust; and

a component having barium metal ions bonded to a conjugate base oxide of an inorganic acid, the inorganic acid having a  $K_a$  such that the ~~automotive~~ catalyst composition resists phase transitions that reduce surface area, wherein the conjugate base oxide is a phosphorus oxide and the inorganic acid is a phosphorus-containing acid.

2. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 1 wherein ~~the conjugate base oxide is a phosphorus oxide and the inorganic acid is a phosphorus-containing acid~~ the catalyst composition has a  $K_a$  value between  $5.0 \times 10^{-7}$  and  $1.0$ .

3. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 2 wherein ~~the component includes a phosphate-modified alumina compound~~ the catalyst composition has a  $K_a$  value between  $5.0 \times 10^{-5}$  and  $1.0 \times 10^{-1}$ .

4. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 3 wherein the phosphate-modified alumina compound comprises a phosphate-doped alumina compound.

5. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 4 wherein the phosphate-doped alumina compound comprises a phosphate-doped gamma-alumina compound.

6. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 1 wherein the component having metal ions bonded to a conjugate base oxide of an inorganic acid is present in an amount from about 0.3 weight percent to about 50 weight percent of the total weight of the exhaust catalyst composition.

7. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 1 wherein the component having metal ions bonded to a conjugate base oxide of an inorganic acid is present in an amount from about 1 weight percent to about 20 weight percent of the total weight of the exhaust catalyst composition.

8. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 1 wherein the conjugated base oxides are milled or grounded into fine particles suitable for washcoating on substrates.

9. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 1 wherein the conjugate base oxide are nanoparticles.

10. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 1 further comprising a catalyst support.

11. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 1 wherein the conjugate base oxides are deposited onto or impregnated in the catalyst support.

12. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 10 wherein the catalyst support is selected from the group consisting of  $\text{Al}_2\text{O}_3$ ,  $\text{SiO}_2$ ,  $\text{TiO}_2$ , zeolites, and combinations thereof.

13. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of ~~claim 2~~ claim 1 wherein the component includes a phosphate-modified silica-alumina compound.

14. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 1 wherein the metal or metal-containing compound comprises a precious metal is selected from the group consisting of platinum, palladium, and rhodium.

15. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 14 wherein the precious metal is platinum.

16. (Currently Amended) The ~~automotive exhaust~~ catalyst composition of claim 1 further comprising a Ce-containing oxides.

17. (Original) The automotive exhaust catalyst composition of claim 16 wherein the Ce-containing oxide is a mixed oxide selected from the group consisting of Ce/Zr oxide, Ce/Pr oxide, Ce/Pr/Zr oxide, and combinations thereof.

18. (Currently Amended) A NO<sub>x</sub> trap comprising:  
a substrate;  
a catalyst composition coated upon the substrate, the catalyst composition ~~comprising;~~ comprising:  
a precious metal-containing compound; and  
a component having barium metal ions bonded to a conjugate base oxide of an inorganic acid, the inorganic acid having a K<sub>a</sub> such that the ~~automotive~~ catalyst composition resists phase transitions that reduce surface area, wherein the conjugate base oxide is a phosphorus oxide and the inorganic acid is a phosphorus-containing acid.

19. (Currently Amended) The NO<sub>x</sub> trap of claim 18 wherein ~~the conjugate base oxide is a phosphorus oxide and the inorganic acid is a phosphorus-containing acid~~ the component is present in an amount from about 1 weight percent to about 20 weight percent of the total weight of the catalyst composition.

20. (Currently Amended) The NO<sub>x</sub> trap of claim 18 ~~[[19]]~~ wherein the component includes a phosphate-modified alumina compound.

21. (Previously Presented) The NO<sub>x</sub> trap of claim 20 wherein the phosphate-modified alumina compound comprises a phosphate-doped alumina compound.

22. (Original) The NO<sub>x</sub> trap of claim 18 wherein the catalyst composition further comprises a catalyst support.

23. (Currently Amended) The NO<sub>x</sub> trap claim 20 [[21]] wherein the phosphate-doped alumina compound comprises a phosphate doped gamma-alumina compound.

24. (Currently Amended) A method of inhibiting coarsening in an automobile exhaust catalyst composition having a barium containing compound, the method comprising:  
impregnating a phosphate-doped alumina compound with a barium-containing solution; and

mixing the phosphate doped alumina impregnated with the barium containing solution with a compound containing at least one soluble metal compound to obtain a metal or metal-containing compound with a component having barium ions bonded to a conjugate base oxide of an inorganic acid, the inorganic acid having a K<sub>a</sub> such that the automotive catalyst composition resists phase transitions that reduce surface area, wherein the conjugate base oxide is a phosphorus oxide and the inorganic acid is a phosphorus-containing acid.

25. (Currently Amended) The method of claim 24 ~~wherein the conjugate base oxide is a phosphorus oxide and the inorganic acid is a phosphorus-containing acid and~~ further comprising modifying an alumina compound with a phosphorus-containing acid to obtain a phosphorus-modified alumina compound forming a portion of the component.

26. (Previously Presented) The method of claim 25 wherein the modifying step includes doping the alumina compound with phosphorus to obtain the phosphorus-modified alumina compound.

27. (Previously Presented) The method of claim 24 wherein the phosphate-modified alumina compound comprises a phosphate-doped gamma-alumina compound.

28. (Previously Presented) The method of claim 24 wherein the soluble metal compound comprises a precious metal is selected from the group consisting of platinum, palladium, and rhodium.

29. (Previously Presented) The method of claim 28 wherein the precious metal is platinum.